

AMENDMENT TO THE CLAIMS

Please cancel claims 1-18.

1-18. (Canceled)

19. (Original) A method, comprising:

patterning a masking material over a substrate having an opening to a contact node formed on the substrate;

creating an interconnection element having a base coupled to the contact node and a free end extending over a portion of the masking material, the interconnection element comprising a first element material and a second element material;

removing the masking material; and

transforming a property of one of the first element material and the second element material of the interconnection element to modify the shape of the interconnection element.

20. (Original) The method of claim 19, wherein transforming comprises transforming each of the first element material and the second element material.

21. (Original) The method of claim 19, wherein transforming comprises heating the interconnection element to a temperature.

22. (Original) The method of claim 19, wherein transforming produces a volume change in one of the first element material and the second element material.

23. (Original) The method of claim 19, wherein the transformable property comprises stress and transforming comprises modifying the magnitude of the stress.

24. (Original) The method of claim 19, wherein the transformation biases the free end of the interconnection element from a first position to a second position that is a greater distance from a surface of the substrate.
25. (Original) The method of claim 24, further comprising limiting the transformation bias of the free end of the interconnection element.
26. (Original) The method of claim 19, further comprising:
introducing a third element material having a resilient property over the interconnection element.
27. (Original) The method of claim 26, wherein the introduction of the third element material comprises electroplating a conductive alloy.
28. (Original) The method of claim 26, wherein the interconnection element is coupled to a surface of the substrate and the third element material is introduced over a surface of the interconnection element opposite the substrate surface, the method of introducing the third element material comprising:
patterning a masking material over the substrate to have an opening exposing the surface of the interconnection element; and
introducing the third element material to the exposed surface of the interconnection element.
29. (Original) The method of claim 28, wherein the masking material is an electrophoretic resist material.
30. (Original) The method of claim 28, wherein the third element material is introduced by electroplating.

31. (Original) The method of claim 19, wherein the second element material is coupled to the first element material at a side opposite the substrate and the second element material comprises the transformable property, the method further comprising:

after transforming the property, removing the second element material.

32. (Original) The method of claim 31, wherein the second element material comprises a shape memory alloy and creating an interconnection element comprises introducing the second element material in a martinsite state and transforming a property of the second element material comprises transforming the second element material to a memory state, the second element material having a volume in its memory state that is different than a volume in its martinsite state.

33. (Original) The method of claim 32, wherein after transforming the property, the method further comprising:

annealing the interconnection element.

34. (Original) The method of claim 19, prior to creating an interconnection element, re-distributing the contact node from a first contact point on the substrate to a different second contact point on the substrate and creating the interconnection comprises coupling the base at the second contact point.

35. (Original) The method of claim 19, further comprising:

after transforming, coupling the substrate to contact nodes on an electronic component at the released end of the interconnection element.

36. (Original) The method of claim 35, further comprising:

after coupling, testing one of the substrate and the electronic component.

37. (Original) The method of claim 36, wherein the electronic component comprises a die and the released end of the interconnection element is coupled to a bond pad of the die.

38. (Original) A method comprising:

forming an interconnection element on a surface of a first substrate, the interconnection element comprising a first element material and a second element material and a base end coupled to a contact node on the first substrate and a free end;

transforming a property of one of the first element material and the second element material to modify the shape of the interconnection element; and

coupling the interconnection element at the free end to a contact node on a second substrate.

39. (Original) The method of claim 38, wherein forming the interconnection element comprises forming a plurality of interconnection elements coupled to corresponding contact nodes on the first substrate and coupling the interconnection element comprises coupling the plurality of interconnection elements to corresponding contact nodes on the second substrate.

40. (Original) The method of claim 39, wherein coupling comprises bringing the free ends of the plurality of interconnection elements together with corresponding contact nodes with a sufficient contact force to make a pressure connection.

41. (Original) The method of claim 39, wherein the plurality of interconnection elements comprise first interconnection elements coupled to corresponding first contact nodes on a first surface of the first substrate and second interconnection elements coupled to corresponding second contact nodes on a second surface of the first substrate,

wherein the first interconnection elements are coupled to the contact nodes on the second substrate.

42. (Original) The method of claim 41, further comprising coupling the second interconnection elements to corresponding contact nodes of a third substrate in an interposer application.
43. (Original) The method of claim 39, further comprising testing the second substrate.
44. (Original) The method of claim 39, wherein the second substrate is a circuit board,
45. (Original) The method of claim 39, wherein the contact nodes of the second substrate comprise external connection points, the method further comprising:
coupling the external connection points of the second substrate to corresponding contact nodes of a third substrate.
46. (Original) The method of claim 39, wherein coupling comprises a temporary connection to the second substrate.
47. (Original) The method of claim 39, wherein coupling comprises a permanent connection to the second substrate.
48. (Original) The method of claim 47, wherein coupling comprises soldering the free ends of the interconnection elements to the corresponding contact nodes of the second substrate.
49. (Original) The method of claim 39, wherein the second substrate is part of a system.
50. (Original) The method of claim 49, wherein the system comprises one of an integrated circuit test system and a substrate system.